Item 65N FY 97
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PURCHASE DESCRIPTION

CABLE METER

MLCAA

1.0 GENERAL This procurement requires a cable meter capable of testing cable in Local Area Network (LAN) installations against the Telecommunications Industry Association (TIA) standard TSB-67.

2.0 CLASSIFICATION The equipment shall conform to the requirements of MIL-T-28800 Type II, Class 3, Style S, and Color R for shipboard applications.

3.0 OPERATING CHARACTERISTICS The equipment shall provide the capability to test and troubleshoot coaxial and twisted pair cables in LAN installations. The equipment shall provide the following essential functions.

3.1 Cable types and cable connections

3.1.1 Cable types: The equipment shall provide the capability to test the following cable types:
_ Unshielded Twisted Pair (UTP) 100Ω cables of categories (cat) 3, 4, and 5.
_ Foil-screened Twisted Pair (FTP/STP) 100Ω and 120Ω cables of cat 4 and 5.
_ Shielded Twisted Pair (STP) 150Ω cables of IBM type 1, 2, 6, and 9.
_ Coaxial cables: RG-58, RG-59, and RG-62.

3.1.2 Cable connections: BNC and either RJ-45 (shielded) or DB-15 with DB-15 to RJ-45 adapter.

3.2 Cable testing The equipment shall provide the capability to test installed cabling links that consist of cables and connecting hardware. The equipment shall perform the following functions:

3.2.1 Wire map: The equipment shall provide the capability to display pin-to-pin connection (including shield) and to test for mis-wiring, opens, and shorts for twisted pair link.

3.2.2 Link length:

3.2.2.1 Range: 0 - 610m (0 - 2000ft)
3.2.2.2 Resolution: 0.3m (1ft)
3.2.2.3 Accuracy:
3.2.2.3.1 For 0 - 100m (0 - 328ft): ±(0.9m (3ft)+ 3% of reading))
3.2.2.3.1 For 100 - 610m (328 - 2000ft): ±(0.3m (1ft) + 4% of reading))

3.2.3 DC loop resistance: The equipment shall provide the capability to measure and report the DC resistance for coaxial and twisted pair cables.

3.2.3.1 Range: 0Ω - 400Ω

3.2.3.2 Resolution: 0.1Ω
3.2.3.3 Accuracy: ±(2Ω + 1% of reading)

3.2.4 Characteristic impedance: The equipment shall provide the capability to determine characteristic impedance of each cable pair.

3.2.4.1 Range: 35Ω - 100Ω for coax and 70Ω - 180Ω for twisted pair
3.2.4.2 Resolution: 1 Ω
3.2.4.2 Accuracy: ±(5Ω + 5% of reading)

3.2.5 Attenuation: The equipment shall identify the worst case attenuation of each wire pair in a link and issue a Pass/Fail diagnosis by comparing the worst case against the allowable attenuation values. Allowable attenuation values are defined in TIA standard TSB-67.

3.2.5.1 Frequency range: 1 - 100 MHz
3.2.5.2 Frequency step: 1 MHz max
3.2.5.3 Resolution: 0.1dB
3.2.5.4 Accuracy: ±1 dB over the range of 0 - 25 dB
3.2.5.5 Test report: The equipment shall report the result of attenuation tests as follows:
3.2.5.5.1 Pass/Fail: The equipment shall report whether the test passed or failed, the highest attenuation, and the test limit in the frequency band of interest.
3.2.5.5.2 Detailed report: The equipment shall be capable of plotting test results over the frequency band of interest.

3.2.6 Dual Near End Crosstalk (NEXT): The equipment shall provide the capability to test NEXT loss from both ends of a twisted pair link at the same time. The equipment shall identify the worst case NEXT loss of each twisted pair combination in a link and issue a Pass/Fail diagnosis by comparing the worst case against the allowable NEXT values. Allowable NEXT values are defined in TIA standard TSB-67.

3.2.6.1 Frequency range: 1 - 100 MHz
3.2.6.2 Frequency step: 150 KHz max for 1 - 31.25 MHz and 250 max for 31.26 - 100 MHz
3.2.6.3 Resolution: 0.1dB
3.2.6.4 Accuracy: ±1.6 dB at basic link
3.2.6.5 Test report: The equipment shall report results of the NEXT test as follows:
3.2.6.5.1 Pass/Fail: The equipment shall report whether the test passed or failed, the worst case NEXT, and the test limit in the frequency band of interest.
3.2.6.5.2 Detailed report: The equipment shall be capable of plotting the test results over the frequency band of interest.

3.2.7 Return loss: The equipment shall provide the capability to test return loss of the cable link and report the test results in a list format.

3.2.8 Time Domain Reflectometry (TDR): The equipment shall provide the capability to locate impedance anomalies caused by problems such as shorts, opens, poor connections, and mismatch in the cable link. Test results shall be reported as a graphic plot.

3.2.9 Custom cable configuration: The equipment shall provide the capability to define custom test

standards for custom cables.

3.2.10 Test result management:

3.2.10.1 Test result storage and print: The equipment shall provide the capability to store test results in nonvolatile memory. The equipment shall also provide the capability to print stored result on a printer.

3.2.10.2 Test result upload: The equipment shall provide the capability to upload the test results to an IBM compatible computer running Microsoft windows 3.1 or later for viewing and printing.

4.0 GENERAL REQUIREMENTS

4.1 Display: A minimum of 160 x 160 graphic bit-mapped LCD.

4.2 Input/Output interface: Serial communication (RS-232).

4.3 Power source: MIL-T-28800E nominal power sources are required. Maximum power consumption: 55 Watts max.

4.3.1 DC internal power source: Internal batteries and charger are required. Minimum operating time shall be 8 hours after a recharge time not to exceed 3 hours for both main and remote units.

4.4 Temperature:

4.4.1 Operating: 0°C - 50°C

4.4.2 Non-operating: -4°C - 60°C

4.5 Lithium Batteries Per MIL-T-28800E, lithium batteries are prohibited without prior authorization. A request for approval for the use of lithium batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed.

4.6 Weight: 1.5 kg (3 lbs, 5 oz) max for main unit and 1.5 kg (3 lbs, 5 oz) max for remote unit.